

REMARKS

Claims 1-33 are pending in this application, with claims 1, 2, 8, 9, 11, 12, 22-24, 28, and 31 being independent. Claims 9, 10, 23, 24-27, 29, 30, 32, and 33 have been amended. Claims 1-8 and 11-21 were previously withdrawn.

Independent claims 9, 22-24, 28, and 31 have been rejected along with their dependent claims 10, 25-27, 29, 30, 32, and 33 as being unpatentable over Soeda (U.S. Patent No. 6,583,583) in view of Yamazaki (U.S. Patent No. 6,420,200).

Claim 9, as amended, recites a film formation method that includes "setting different temperatures to a material plural times to form a purified material by sublimation; and forming a thin film on a substrate using the purified material *immediately after the setting step*" (emphasis added). Applicants request reconsideration and withdrawal of the rejection of claim 9 and its dependent claim 10 because neither Soeda, Yamazaki, nor any combination of the two describes or suggests forming a thin film on a substrate *immediately* after forming a purified material by sublimation.

Soeda describes a method and apparatus for refining, through sublimation, a raw material (Alq3) that may be used to fabricate an organic EL device. Soeda describes how the raw material is processed in a sublimation zone of an apparatus and how refined Alq3 separates in a product recovery zone. The refined Alq3, which the Examiner equates to the purified material, is collected from the product recovery zone (col. 8, lines 36-40) and is deposited as a thin film on a substrate to form an EL device (col. 11, lines 38-46). Soeda, however, does not describe or suggest using the refined Alq3 to form the thin film *immediately* after the Alq3 is formed through sublimation. Forming the thin film immediately after forming the purified material decreases the possibility that impurities will be introduced in the film after formation of the purified material and before deposition onto the substrate.

Yamazaki describes a method of manufacturing an EL device that decreases manufacturing costs of the EL device by forming the EL layer through printing. Yamazaki, however, does not describe or suggest forming a thin film using a purified material immediately after the material is purified through sublimation.

For at least these reasons, neither Soeda, Yamazaki, nor any combination of the two describes or suggests the claimed formation of a purified material by sublimation and forming of a thin film using the purified material immediately thereafter. Accordingly, applicants request reconsideration and withdrawal of the rejection of claim 9 and its dependent claim 10.

Claim 23, as amended, recites a film formation method that includes “evaporating a material in a first system ... controlling a second system ... to change the material into a gas and a solid; removing the gas; evaporating the solid to form an evaporation in the second system ...; and forming a thin film on a substrate using the evaporation *immediately after the second evaporating step*” (emphasis added). Applicants request reconsideration and withdrawal of the rejection of claim 23 for at least the reasons discussed above with reference to claim 9. In particular, neither Soeda, Yamazaki, nor any combination of the two describes or suggests forming a thin film on a substrate immediately after a series of operations to purify a material through evaporation in a first system and then in a second system.

Claim 24, as amended, recites a film formation method that includes “evaporating a material in a first system ...; controlling a second system ... to change the material into a gas and a solid; and forming a thin film using the gas over a substrate *immediately after the controlling step*” (emphasis added). Applicants request reconsideration and withdrawal of the rejection of claim 24 for at least the reasons discussed above with reference to claim 9. In particular, neither Soeda, Yamazaki, nor any combination of the two describes or suggests using a gas to form a thin film on a substrate immediately after that gas is formed by a second system that changed a material into the gas and a solid.

Claim 22 relates to a film formation method that includes evaporating a material in a first system controlled to a first temperature. A second system is controlled to a second temperature to change the material into a first gas and a first solid. The first gas is removed. The first solid is evaporated in the second system controlled to the first temperature. A third system is controlled to a third temperature to change the evaporated first solid into a second gas and a second solid, and a thin film is formed using the second gas over a substrate. Applicants request reconsideration and withdrawal of the rejection of claim 22 and its dependent claim 25 because

neither Soeda, Yamazaki, nor any combination of the two describes or suggests the recited second system controlled to a second temperature and then to a first temperature.

Soeda discloses a method for refining Alq3 using an apparatus that has a sublimation zone and one or more product recovery zones. The sublimation zone is controlled at a fixed temperature (col. 5, lines 33-42; col. 8, lines 28-34) and the product recovery zone or zones are each controlled at fixed temperatures (col. 5, lines 49-57; col. 6, 12-15; col. 8, lines 33-36). The temperature of each zone is maintained at a constant level and is not changed during the described purification process. Accordingly, Soeda does not describe or suggest a second system controlled to a second temperature and then to a first temperature as claimed. Yamazaki also does not describe or suggest the recited sequence of operations including controlling a second system to a second temperature and then to a first temperature.

For at least these reasons, no proper combination of Soeda and Yamazaki describes or suggests the claimed combination of steps, and accordingly, applicants request withdrawal of the rejection of claim 22 and its dependent claim 25.

Claims 28 and 31 recite a film formation method including "evaporating a solid including an EL material to form a gas including the EL material ... ; moving the gas including the EL material with a carrier gas ... , and a temperature of the gas including the EL material *gradually* decrease in accordance with the moving; ... " (emphasis added). Applicants request reconsideration and withdrawal of the rejection of claims 28 and 31, and their dependent claims, because neither Soeda, Yamazaki, nor any combination of the two describes or suggests the recited moving of a gas such that the temperature of the gas *gradually* decreases.

As discussed above in reference to claim 22, Soeda describes an apparatus including a sublimation zone maintained at a constant temperature and a product recovery zone maintained at a constant temperature. Accordingly, such an apparatus does not provide for a gradual decrease of temperature of a moving gas as claimed. Yamazaki also does not describe or suggest the recited moving of the gas such that the temperature of the gas gradually decreases in accordance with the moving of the gas.

Applicant : Shunpei Yamazaki, et al.
Serial No. : 10/033,100
Filed : October 25, 2001
Page : 8 of 8

Attorney's Docket No.: 07977-287001 / US5276

For at least these reasons, no proper combination of Soeda and Yamazaki describes or suggests the claimed moving of the gas such that the temperature of the gas gradually decreases in accordance with the moving, and, accordingly, applicants request reconsideration and withdrawal of the rejection of claims 28 and 31 and the claims that depend from them.

Applicants submit that all claims are in condition for allowance.

Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 10/23/03



John F. Hayden
Reg. No. 37,640

Fish & Richardson P.C.
1425 K Street, N.W.
11th Floor
Washington, DC 20005-3500
Telephone: (202) 783-5070
Facsimile: (202) 783-2331